

**FINAL 2020**

**Western Snowy Plover and California Least Tern  
Annual Breeding Season Monitoring Report for  
Hollywood Beach, Oxnard, CA**



**First CLT hatch since 2014**

**Submitted to:**

**U.S. Fish and Wildlife Service, Ventura Field Office  
California Department of Fish and Wildlife,  
and Ventura Audubon Society**

**By:**

**Debra Barringer, M.S.  
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## Final 2020 Western Snowy Plover and California Least Tern Breeding Season Monitoring Report for Hollywood Beach

### EXECUTIVE SUMMARY

The abundance and productivity of western snowy plover (*Charadrius nivosus nivosus*) and California least tern (*Sternula antillarum browni*) were monitored at Hollywood Beach, located near Oxnard, California during the breeding season. Activities were conducted according to U.S. Fish and Wildlife Service (USFWS) protocols for nest monitoring under the Endangered Species Act (ESA) by recovery permit holder Debra Barringer (TE-89964A-1). Monitoring occurred twice per week, more often if hatching was expected or to observe chicks.

There were 10 western snowy plover (WSP) nesting attempt on Hollywood Beach in 2020, likely increased over the 5 nests of the past 2 years by the presence of nesting California least terns (CLTs) this year. It is estimated that a minimum of 3 WSP chicks survived until fledging after 26 of 30 eggs hatched successfully (87% hatch rate), but could not be verified. With no local banding and migratory WSPs and hatch years arriving on the beach, tracking fledglings became impossible as chicks mixed with WSPs from other beaches by late July.

CLTs initiated 21 nests after no nest attempts on Hollywood Beach since 2015. Even though several CLT nests were incubated until hatching dates, and monitors were able to observe two newly hatched chicks, all chicks and eggs were determined to be depredated. The colony was likely not large enough for the adults to provide constant protection vigilance against resident American crow predators.

Symbolic fencing was erected and altered in four large polygons around both species' new nests as they appeared, trending north as the season progressed. Wire predator exclosures were used for all WSP nests and were readily accepted by the parent present; no adults were adversely affected by exclosures. Resident American crows were observed on most survey days, including gathering nest material and flying to tall trees in the vicinity. It is believed that two pairs nest locally and use the beach as foraging territory. Crows are the primary predators/scavengers of WSP hatchlings once they leave nest exclosures and for CLT eggs and chicks. Heavy human recreational use and dogs off-leash remain a constant source of nest and chick disturbance in and outside breeding area fences. Despite, and perhaps because of lock-down ordinances related to Covid-19, the typical beach visitation seemed steady all through the week and many visitors brought dogs and allowed them off leash. Both authorized and unauthorized vehicles were also used on the beach very near nest areas. Disturbances were documented and dogs and crows observed were recorded.

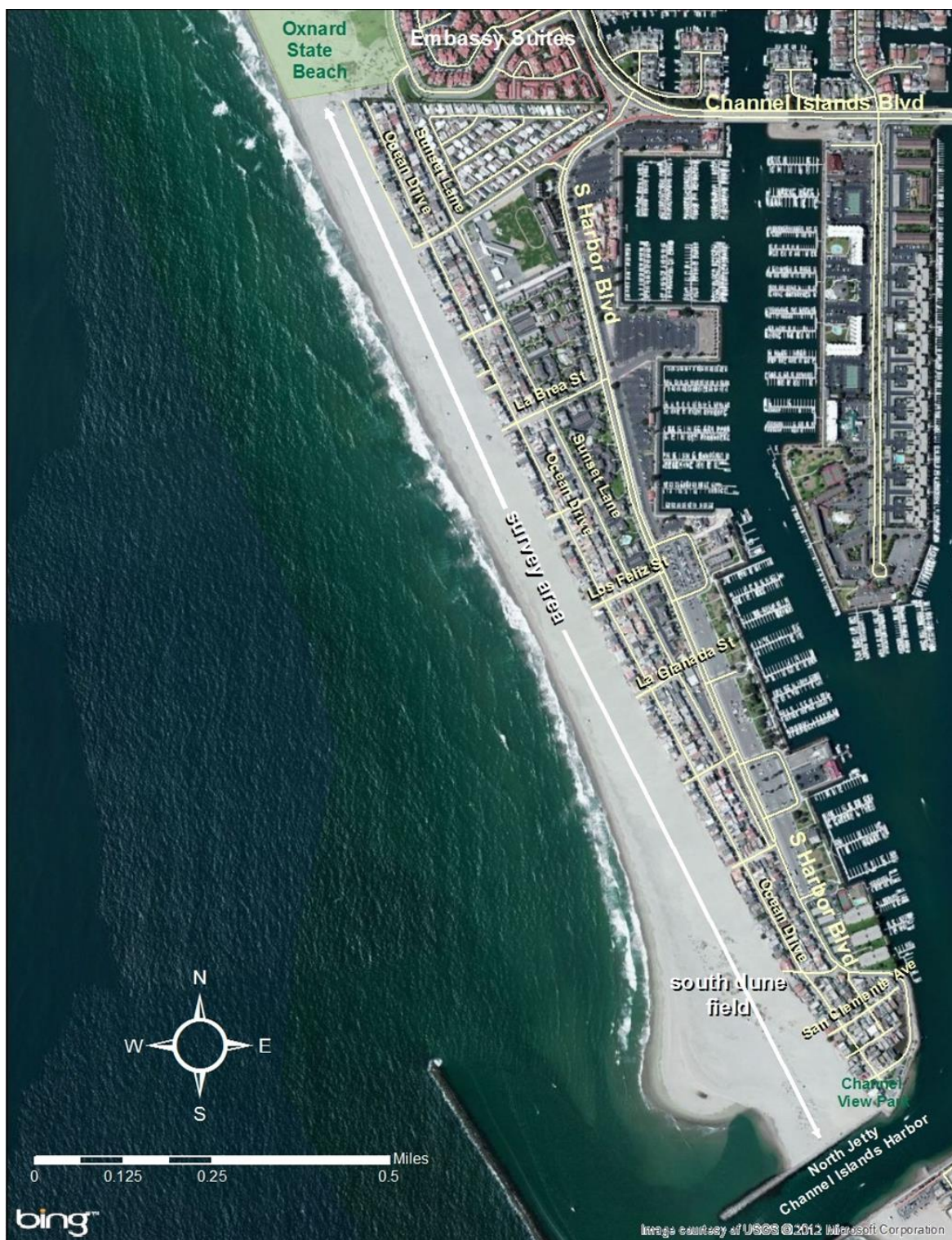
### INTRODUCTION AND SITE DESCRIPTION

Hollywood Beach is located on unincorporated land in Ventura County on the west side of the City of Oxnard (Figure 1). It is located between the City of Oxnard Beach Park on the north and the entrance to the Channel Islands Harbor and Silver Strand Beach on the south; Figure 2 depicts the nesting bird survey area in relation to these features. Hollywood Beach is administered by Ventura County, much of it is designated as County Open Space, and maintenance is managed by the Channel Islands Harbor Department (HD). The dunes are included within the County-designated coastal Environmentally Sensitive Habitat Area (ESHA).



**Figure 1. Hollywood Beach Region**

The majority of Hollywood Beach is also designated as critical habitat for the western snowy plover by the USFWS excluding the “sand trap” area on the south end that is affected by periodic dredging (Federal Register 2012). The sand trap area supports a remnant of natural vegetation and sand dunes that attracts the greatest number of WSPs and CLTs during the nesting season. The U.S. Army Corps of Engineers (ACOE) oversees dredging of the harbor and channel adjacent to Hollywood Beach, usually occurring every other year. The sand trap was designed to capture sand before it enters the harbor mouth. Prior to and during the winters of 2013 and 2014 decreased funding reduced the dredging efforts and an unusually large amount of sand collected, forming an extra wide dune field and beach. In those two years, unprecedented increases in WSP nests (29 nests for 2013, over 300% of average) and CLT nests (209 nests in 2013, over 2,000% of average) were initiated. Most eggs hatched as there were virtually no predators observed during 2013. With low depredation, fledgling recruitment was high for both species but difficult to verify with no banding. Dredging occurred fall-winter of 2014, the beach lost a majority of the low foredune habitat where most of the nests occurred, and an anticipated drop of adult presence and nesting activity for both species resulted during the 2015 breeding season and for several years after. The native vegetation and foredunes have been very slow to regrow since then.



**Figure 2. Locations of Survey Area Monitored at Hollywood Beach**

The recreating public also uses the dune area, often bringing and unleashing dogs. This beach is a popular public beach and has posted dog leash use and timing restrictions, that are rarely complied with or enforced. Dogs are perceived by nesting plovers and terns as a predator, causing them to leave nests, split from chicks to

use distraction displays, and expend extra energy trying to lead/chase the dog away as their only defense. This behavior likely occurs all day long, especially on warm and sunny days when beach visitation is highest. Monitors use various protection measures including fencing, signs and wire predator exclosures over plover nests but it is difficult to eliminate all disturbances.

Lifeguard towers, a restroom building, and trash cans are provided for public use and serviced by the HD staff that drive vehicles along the beach. In spring the HD staff is trained about the beach bird nesting season but even monitors on foot have a very hard time seeing new nests so all vehicles are a concern. HD maintenance staff remains on established driving routes along the trash cans to reduce threats to nests. Homeowners on the beach are allowed to hire a private sand-moving tractor to push sand away from their properties all year, even during breeding season. Of most concern are unauthorized vehicles accessing the beach including frequently observed golf carts and other all-terrain vehicles (ATVs), many times used after dark and on weekends near nest areas. Access is easy via several openings between houses leading directly off Ocean Street. Low-flying aircraft including helicopters, ultra-lights, paragliders and drones that fly over the dunes and nesting areas have caused disturbances to incubating birds on nests. Ground-nesting birds perceive aerial objects as similar to their avian predators and often flush from nests when flown over. Also, Channel Islands Harbor hosts a Fourth of July festival that attracts very large crowds to the area and includes the loud noises and lights of fireworks that are disturbing to nesting birds.

The south end of the beach is generally wider, but varies year to year due to dredging, and supports an approximately 9-acre dune field (Figure 2). Some of the backdunes have grown quite high due to sand build-up caused by the presence of deep-rooted, nonnative, European beachgrass (*Ammophila arenaria*). Both WSPs and CLTs avoid placing nests near the tallest dunes and tall vegetation, primarily using the beach side of the dunes in the sand trap. Continued spread of the beachgrass may reduce availability of suitable nesting habitat.

### **Western Snowy Plover**

The Pacific coast population of the WSP breeds along the coast of the Pacific Ocean in California, Oregon, and Washington, U.S. and in Mexico (Page et al. 1991). Loss, development, and disturbance of habitat, predation pressures from a wide variety of animals, and other human disturbances of breeding birds have caused the decline of the coastal population of WSP that led to federal listing as threatened under the ESA on March 5, 1993 (Federal Register 1993). Hollywood Beach is part of Recovery Unit 5 and is Recovery Site CA-97. The Recovery Plan management potential breeding bird number for this beach is 4, based on data prior to 2005 when nesting was sparse (USFWS 2007).

### **California Least Tern**

The California population of the least tern nests on the beaches of central to southern California. CLTs use beaches with wide expanses of relatively flat, undisturbed, and partially vegetated sand for their nesting colonies. Much of their historical breeding habitat has been altered and developed resulting in reduction of nesting to a few beaches. The California subspecies was federally listed as an endangered species under ESA in 1970 and as endangered under the California Endangered Species Act in 1980. Recovery Plan goals are to prevent extinction and return the population to a stable status (USFWS 1985).

## METHODS

The breeding season survey area covers approximately 1.5 linear miles along the beach and includes the USFWS critical habitat areas. Population counts are collected all year on Hollywood Beach and WSPs continue to occupy the beach year-round, in high numbers during the winter, and with an average of between 3 and 6 breeding pairs during the nesting season. Monitoring is stepped up during the breeding season to twice per week, more often when chicks are present. Banded bird data is also recorded and submitted to the listserv. As for the last couple years, USFWS staff were scheduled to assist with helping place metal t-post and 4-foot mesh fence around historically-used nest areas in March. Due to the Covid-19 restrictions on social distancing, the agency was forced to cancel their work day. During the past couple years, the mesh fences helped keep beach visitors and their dogs a distance away, allowing birds (all species) to rest and roost and WSPs to hide nests and chicks with fewer disturbances when they choose sites within the fences. It is hoped mesh fence can be used again next year.

The monitor with help from Alexis Frangis placed an initial symbolic wood stake and rope fence around the most commonly used nest areas prior to first nest initiation. As nests spread to the north, an additional three large fenced polygons were built for a total of 120 fence posts deployed. Signs in English and Spanish were added. Monitor activities and protection supplies are largely funded by grants obtained by the Ventura Audubon Society.

A thorough population count of all WSPs and CLTs observed is conducted weekly and all numbers recorded (see Table A-1 in Appendix A). In addition, number of dogs observed on- and off-leash and potential predators, primarily crows, are also recorded. Once WSP pairs have formed, behavior is watched closely to determine if they are considering a nesting site and when they begin making scrapes. Each located nest is marked with an inconspicuous numbered wooden tongue depressor placed about 5 feet seaward of nests. All nests are recorded by date found, egg count, parent attendance, and its location using GPS. The incubating parent is only disturbed when it's necessary to check on additional eggs laid or near hatching dates.

Mini-exlosures (most 3 ft x 3 ft wire, some 2.5 ft) are placed over WSP nests and anchored with landscape pins to reduce both the wind moving them and incidences of predation and human-caused disturbance. Once the exclosure is placed, the nest is always watched to make sure the parent bird returns to it. If not located within an established fence, a symbolic fence is added paying attention to flush distance for the adult. Individually-fenced incubating plovers sometimes flush off nests even with people/dogs walking a few feet from the fence, however, they grow accustomed to people keeping outside symbolic fences. In addition, several "decoy" exclosures over no nests are placed on the beach because exclosures can attract the attention of crows. Using decoy exclosures eliminates the positive reward that the crows get landing on active nest exclosures and flushing adults from nests (but not getting access to eggs). This is an attempt at behavior modification to contrast using no exclosures where corvids can flush adults from unprotected nests and receive egg/chick depredation as a reward. Raptor presence, which is also a threat to adults, on this beach is very rare. In addition, plastic, non-sharp bird spikes were added to the tops of selected exclosures to further discourage birds landing on them. It has been observed that crows have landed on exclosures less since these tactics were begun.

Nest hatching not directly observed is determined by locating either egg pip shells within the empty scrape, observing displaying/calling behaviors from adults in the vicinity of the nest, and/or by locating half eggshells further away or observing chicks. A nest is determined to be successful if at least one of the above signs is observed. When a nest is found missing eggs and none of the above signs is observed, evidence of depredation is investigated. Evidence of predators includes animal tracks, eggshell fragments and/or egg yolk in the scrape or within 2 meters, and the physical presence of an animal predator in the vicinity. Where possible the species of predator is determined or at a minimum whether it was mammal or avian. Egg non-viability and/or abandonment is determined by a combination of not seeing an adult bird on/near the nest or their tracks over a couple weeks, checking the nest for a minimum of the incubation time period (4 weeks for WSP, 3 weeks for CLT), and placing one egg on end in the scrape to see if it is repositioned by a parent by the next survey. If the egg has not been moved and no adult activity noted over several weeks, the egg/nest is considered abandoned.

Total breeding WSP adult numbers could be estimated by adding the highest number of simultaneously active nests and the number of active broods sighted on the same survey date. One breeding male and female were attributed to each active nest and one breeding male was attributed to each active brood. Observed chick age-week was estimated and associated with a nest number when possible. It can be assumed that some adult WSPs breed and nest more than once, especially following nest, egg, or chick losses.

Adult CLTs both on the beach and observed flying over were also counted and included on the California Department of Fish and Wildlife (CDFW) nesting data reporting spreadsheet. CLT nests located are also documented and marked with tongue depressors a distance from the scrape. Early in the season, the entire beach is surveyed. When no WSPs or CLTs were seen north of the first lifeguard tower and beach crowds expanded in that area, surveys focused on the southern end of the beach during active breeding with occasional checks further north. Monitors also respond to phone calls from the HD or the public.

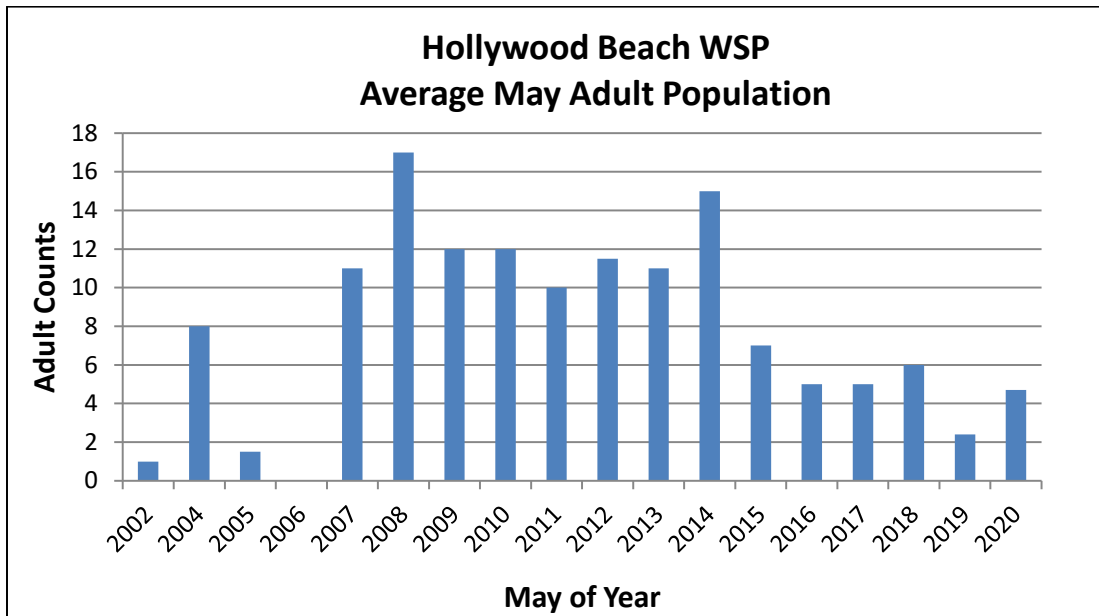
## **RESULTS**

### **WSPs - Population Abundance**

#### **WSP Adults**

All adult, juvenile and chick WSPs observed during surveys were recorded by gender and/or age category when possible (Table A-1). Table A-1 includes numbers of active nests by date, egg counts, and chicks observed as well as other notes.

The average number of adult WSPs observed during May over time that data have been collected is compared in Figure 3. This reflects the population better than the 1-day snapshots collected during the spring Window Survey. May was chosen as the month least affected by presence of non-breeding birds. The May average adult count (5) was similar to in recent years, yet lower than the number of breeding adults (12) determined for this year using largest concurrent nest count (5) plus active broods on same day (1).



**Figure 3. Hollywood Beach Average Adult WSP Population as Recorded During May**

### WSP Non-breeding/Winter Season

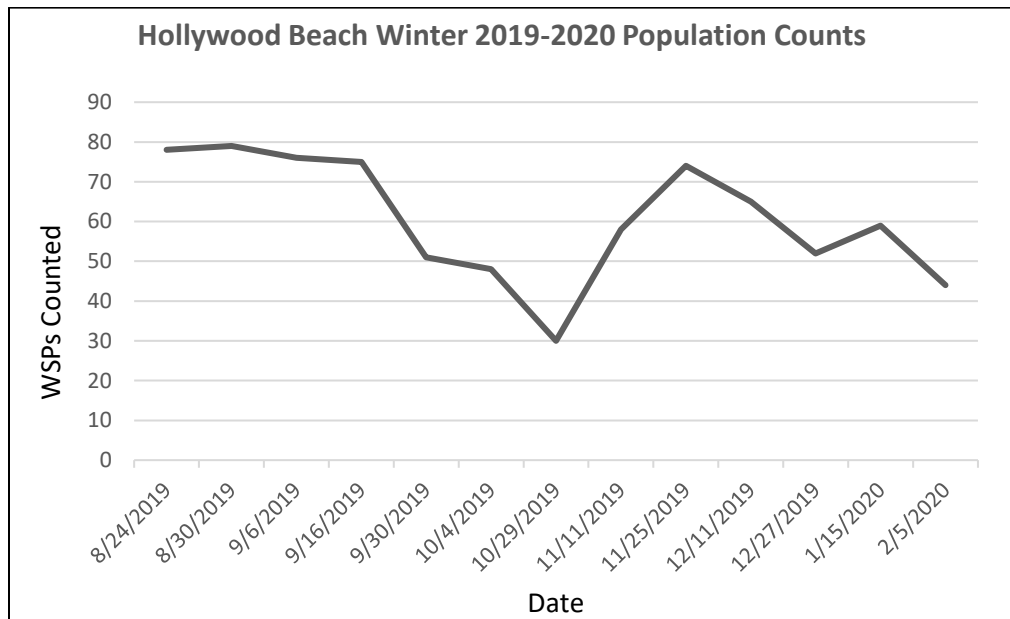
Hollywood Beach supports a fluctuating but consistent WSP population throughout the year. Non-breeding season WSPs have been counted and recorded most weeks through the winter (non-breeding) season since 2012. Especially when Hollywood Beach has experienced reduced nesting season success, it is essential to show data that depict this beach's overall importance for migrating, foraging, resting and winter roosting WSP populations. The amount of kelp and other fresh seaweed wrack that washes up is often substantial, especially in the sand trap area, providing a reliable food resource for WSPs. Their locations often correspond with good amounts of wrack. In addition to the large numbers of WSPs migrating through and stopping at Hollywood Beach beginning in late July and August, these fall-winter results further support the reason a majority of this beach was designated as critical habitat by the USFWS. Figure 4 depicts weekly WSP counts taken from late August 2019 to February 2020.

### WSP Banded Birds

During weekly surveys birds were examined for leg bands through binoculars. Leg band information collected mostly during the winter season provides researchers information on birds' movements. All band combinations were seen on WSPs and are reported to the Snowy Plover listserv. Very few WSP bands are typically observed during the nesting season on this beach. CLTs were also monitored for bands and/or transmitters but none were observed.

Bands observed on Hollywood Beach in recent years were traced primarily to locations to the north including: Moss Landing Salt Ponds (Monterey County), Oceano Dunes State Vehicle Recreation Area (SVRA), Vandenberg Air Force Base (VAFB), Salinas State Beach and National Wildlife Refuge (Monterey County), Marina State Beach (Monterey Bay), Fort Ord State Beach (Monterey County), Humboldt County, CA, and Oregon. WSPs

observed banded from southern locations including Naval Base Coronado (San Diego County), Bolsa Chica Ecological Reserve (Orange County), and Camp Pendleton.



**Figure 4. Hollywood Beach WSP Populations Recorded During Winter Season**

### WSP Nest Activity

During the 2020 nesting season, 10 WSP nests were initiated on Hollywood Beach, with an estimated number of breeding adults at 12 using consecutively active nests and broods. Nest placements began north of the dunes, which is not the usual location for first nests that have historically been in front of the dunes. Figure 5 depicts all of the WSP and CLT nest locations for 2020. Table 1 contains a brief summary of breeding information requested by the CDFW.

**Table 1. Summary of Hollywood Beach WSP Breeding Activity During 2020**

First Observed WSP Nest Initiation Date	20-Apr-20
First Observed Hatch Date	21-May-20
First Observed Fledge Date	NA Oldest chicks observed were all 18 days old, 1 on July 27 and 2 from 2 broods on Aug 10; afterward they became mixed with migrants so fledging could not be verified.
Period of Peak Nesting (the 1-week period with maximum number of active nests)	July 10-17
Last Observed Nest Initiation Date	10-Jul-20
Last Observed Hatch Date	7-Aug-20
Last Observed Fledge Date	NA
Length of Breeding Period (Total # days from first observed nest initiation to last observed fledging)	112 days (to last observed chick)



**Figure 5. WSP and CLT Nest Locations on Hollywood Beach During 2020 (beach geomorphology in photo does not necessarily reflect what was present during nesting)**

After the first 3 nests appeared on the open sand area north of the dunes, then WSPs began using the area in front of the dunes concurrently when CLTs began to appear there. The open area about 500 ft north of the dunes has had no sand-grooming for several years. With less sand disturbance, native plants and small dunes began to form there, making it attractive as suitable nesting habitat for both species. As scrapes and nests

began to appear there, a large symbolic fence was built. The fencing was constantly adjusted as necessary to keep a buffer around active nests as they increased.

Vegetation and other ground cover components observed in both nest habitats and within 1 meter of established WSP nest sites were recorded and are listed in Table 2. The lack of vegetative and other cover around nest sites proved an adverse effect once chicks hatched and had no immediate cover from predators. Chicks hatched in the open area were predominantly led south to the cover and better food resources of the dunes and vegetation by their parents, at least a 500-foot trek.

**Table 2. Ground Cover Estimates for Hollywood Beach WSP Breeding Habitats and 1 Meter Surrounding Nests**

Area or Nest	% Slope	Veg Types	% Veg Cover	% Other Cover
<b>North Habitat (overall)</b>	0	SR (12%) SB (8%) BB (5%)	25%	70% bare sand 5% litter
<b>Nest HB01</b>	0	SR	2%	98% bare sand
<b>Nest HB02</b>	0	N/A	0%	100% bare sand
<b>Nest HB03</b>	0	SR	4%	88% bare sand 8% litter
<b>Nest HB05</b>	0	SR	5%	90% bare sand 5% litter
<b>Nest HB06</b>	0	SR	5%	92% bare sand 3% litter
<b>Nest HB08</b>	0	N/A	0%	95% bare sand 5% litter
<b>Nest HB09</b>	0	N/A	0%	88% bare sand 12% litter
<b>South Habitat (overall)</b>	0	Mixed SR, SB, RSV, BB	10%	82% bare sand 8% litter
<b>Nest HB04</b>	0	SB	1%	96% bare sand 3% litter
<b>Nest HB07</b>	0	SR	10%	85% bare sand 5% litter
<b>Nest HB10</b>	0	N/A	0%	99% bare sand 1% rock
Notes: SR = sea rocket ( <i>Cakile maritima</i> ), SB = saltbush ( <i>Atriplex leucophylla</i> ), BB = beach bur ( <i>Ambrosia chamissonis</i> ), RSV red sand verbena ( <i>Abronia maritima</i> ), litter consists of driftwood, dead arundo stalks, and dried kelp. This beach has very little trash.				

## WSP Nest Fates

Nine of ten WSP nests hatched at least 2 eggs for a total of 26 eggs hatched, 87 percent hatch rate. This is typical of what has been observed on Hollywood Beach using predator exclosures. Chicks were observed

during many survey days and recorded at estimated age in days in Table 3. The presence of CLT nests likely increased the total WSP nests initiated, and even when CLTs nests were all depredated, WSPs continued to initiate more nests than average. In the following descriptions of individual nest fates, focus will be on unusual events and behaviors observed.

**Table 3. Hollywood Beach 2020 Western Snowy Plover Nest Fate Summary**

Nest #	Date Found	Eggs Laid	Date of Hatch/Other	Eggs Hatched	Oldest Chick # & Age Observed	Comments
HB-01	4/20	3	5/21-23	3	2 at 3 days, 1 at 1 day	Eggs hatched over 3 days, female alone incubated and brooded at same time; she moved chicks >500 ft to dunes where Monitor observed crows taking 2 chicks.
HB-02	5/7	3	6/4	3	<1 day	Never observed chicks off scrape.
HB-03	5/21	3	6/4	3	2 days	Saw male, female & 2 chicks.
HB-04	5/29	3	6/29	3	1 day	Saw male, female & 2 chicks.
HB-05	6/11	3	7/10	3	18 days	Followed male with 1 chick to 18 days.
HB-06	6/19	3	7/17	3	3 at 8 days	3 egg pips found after hatch. Saw what appeared to be female with 3 chicks 8 days later.
HB-07	6/25	3	7/24	2	1 at 14 days, 1 at 18 days	Two hatched, collected 1 NV egg weeks later.
HB-08	6/26	3	7/24	3	1 at 18 days	Chick seen on same days as other 18-day old; Hys from other beaches soon arrived and intermixed.
HB-09	7/7	3	7/6	3	3 at 1 day	
HB-10	7/10	3	NV by 7/24	0	NA	Collected 2 of 3 non-viable eggs.
<b>Totals</b>		<b>30</b>		<b>26</b>		

### **Buried Eggs, Missing Male, Miss-timed Hatches, CLTs Aid in Unsuccessful Predator Defense**

The first egg of the first nest (HB01) was found in the middle of the frequently traveled vehicle route for the HD maintenance staff who empty trash cans (Figure 6) on April 20<sup>th</sup> and was just the beginning of the problems this nest would face. The details are worth disseminating as behaviors observed were unique and lessons were learned. HD staff were alerted and quickly moved trash cans and changed their driving travel route. The nest site was individually fenced using rope, stakes, and signs. A second egg was found in HB01 by April 24<sup>th</sup> and it was assumed that the clutch was complete. The next check was on 4/28 when a third egg was recorded, so it was laid at least 5 days and as many as 8 days after the first. This is unusual and can affect hatching synchronicity, although it is believed that some parents can adjust this. In the third week for HB01, a wind event on May 14<sup>th</sup> buried the eggs. It wasn't immediately apparent that 2 eggs were buried as the wind event was very localized, the scrape and 1 egg were still visible, and a check of nearby HB02 revealed all 3 eggs intact. After nest inspection at HB01 and observing 1 egg, the female returned and the Monitor ceased disturbance to let her incubate. The next day, HB01 was checked again and the adult(s) had successfully



**Figure 6. First egg of first WSP nest laid in maintenance vehicle tracks. Dunes (historically preferred nesting area) just visible in background and where chicks were led after hatch.**

unburied another egg, so the Monitor checked and unburied the third egg. The female immediately returned to the nest to incubate 3 eggs. On May 21 by 9:30 a.m. one egg had hatched and a chick was observed near the exclosure in very meager cover (vegetation about 2% cover, no litter) where the female continued to incubate two eggs. Normally, the male would be present to brood and guard the chick but none appeared. The female would occasionally leave the eggs and sit near and on the chick to warm it. The nest was checked again that day at 5 p.m. and the second egg had hatched. The female was switching between sitting on two chicks and the egg within the scrape. I had not seen this in 10 years of monitoring and know it to be very uncommon, a sure sign the male was not helping or available. Ironically, when this nest was discovered, it was the male that was attending the first egg, also rare and a sign of his involvement.

One possibility is that the unusual disruption from County sheriff ATVs and other vehicle traffic (to patrol for Covid-19 compliance) flushed or even injured the male so that he could not continue to attend his nest and brood. It is also possible, but unusual that when the eggs were buried by wind, the male abandoned the nest.

This has not been observed on this beach in the past. It is rare to see nesting males during the day so is difficult to pinpoint when he disappeared. The next day the female was within 20 feet of the nest enclosure, which still held the last egg on the scrape, near the 2 chicks as they ran around and attempted to forage, all in meager cover. Atypically, the crows had not discovered the vulnerable brood yet and had not been observed near the nest (and no tracks). Perhaps the only reason there may have been any insects available for forage among the sparse 2 to 3-inch sea rocket plants was due to rain 4 days earlier. The female returned to incubate the third egg occasionally and at one point hid the chicks near the 3-inch sea rocket and flew away, likely to forage. She called upon returning and the chicks came to her where she incubated the egg in the scrape – another rare sight. The third egg hatched by morning of May 23 and the female managed to lead the 3 tiny chicks over 500 feet to the dune area, which harbors more vegetation for cover and food. As the Monitor was watching at a distance with binoculars, some of the 47 newly arrived CLTs mobbed two crows (CLTs did not have active nests to protect yet, this is also very unusual). However, the crows managed to find and depredate two of the three chicks among the dune vegetation. Later the female with the youngest chick was seen being chased by the 4<sup>th</sup> WSP pair that had been scraping for many days in the south fence. HB01 female and last chick were not observed 2 days later or again.

The second nest (HB02) was initiated about 50 feet from HB01 on open sand and found on May 7<sup>th</sup> with 2 eggs. Fences and signs were adjusted accordingly to combine the 2 nest areas. A third male was seen scraping near this area and the female from HB02 chased him away repeatedly. Fences were adjusted a couple more times to give more human/dog disturbance buffers to nests and scrapes. In addition, in anticipation of the first hatches potentially heading seaward, more fences to limit vehicle traffic were added toward the ocean wrackline. A third egg was added to HB02.

HBO3 was recorded on May 21 within 75 feet of both other WSP nests with 3 eggs. This male had been harassed by the female from HB02 but stayed within the vicinity, another sign that this newly revegetating habitat was very attractive to breeding WSPs. The female with HB03 was on the nest almost constantly. On May 25, a crow was observed to land next to the HB03 enclosure and CLTs appeared and mobbed it until it left. Another interesting behavior because the CLTs did not have active nests on the beach yet, but they were observed making scrapes in this area that day.

### **Very Rare Inter-Species Chick Brooding**

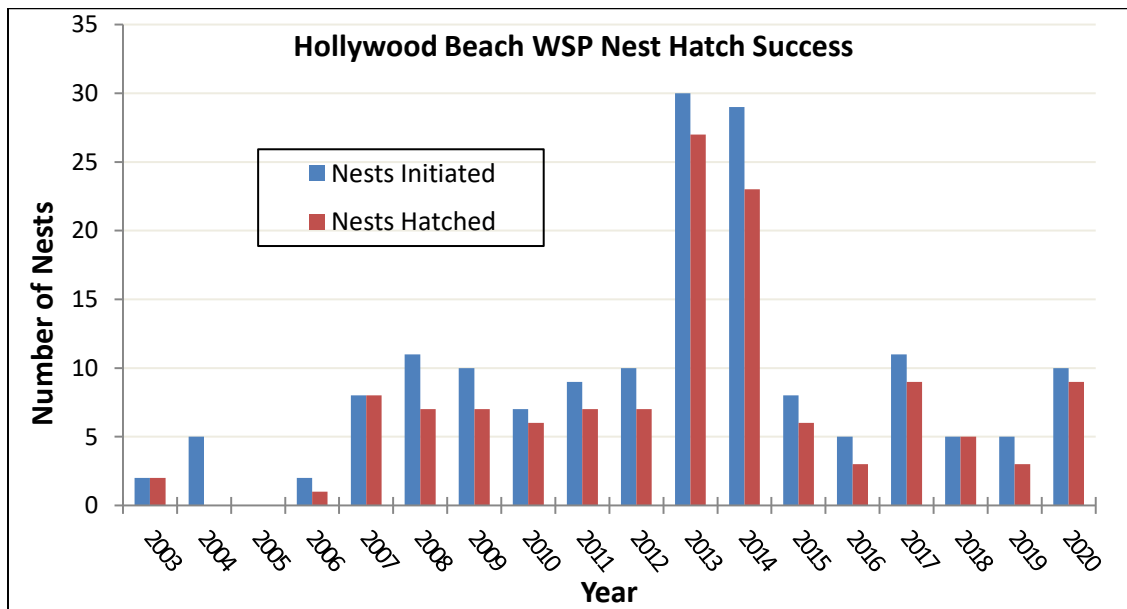
Nest HB04 was initiated within the historically used nest habitat in front of the dunes once CLTs arrived and began to nest. This WSP pair was observed scraping for weeks prior, an unusually long waiting period. A few days prior to HB04 hatching, the male associated with this nest discovered a nearby newly-hatched CLT chick and began warming it. He was observed brooding the CLT chick with the CLT adult parents nearby. They proceeded to dive on the male WSP until he would leave the chick, then a CLT parent would brood it until disturbed by the distracting male WSP again. Figure 7 is a screenshot of a parent CLT chasing the WSP as the other parent broods the chick. This went on over a 2-hour period as Monitors watched. The CLTs and WSP switched off brooding the still-wet chick, with the WSP distracting and all battling for position. Eventually the tired-looking male WSP wandered back to his own nest and replaced the female on three eggs.



**Figure 7. Screenshot of a CLT parent chasing the male WSP that brooded its chick as other brooding CLT parent looks on**

Even though the CLT nesting colony was completely depredated by July and with their leaving the area, the extra protection from predators was greatly reduced, WSPs went on to add four nests in late June-early July for a total of 10 nests. The last two years (when no terns were present) WSPs initiated 5 nests each year. The use of mini-exlosures assured that WSP eggs were not depredated. It seemed that the crows moved on to other food sources by July allowing several WSP chicks the opportunity to grow to over 2 weeks of age, three observed to at least 18 days old, but potential to fledging was difficult to verify.

WSP nest hatch success at this beach since 2003 is compared in Figure 8.



**Figure 8. Hollywood Beach Nest Hatch Success Since 2003**

## CLTs - Population Abundance

### CLT Adults and Nest Activity

Adult CLTs were counted during surveys, with adult flyovers first observed on May 7. Numbers observed and recorded combine those seen in the air and on the ground as best as possible. All breeding activity observations are included in the CLTE Data Reporting Spreadsheet submitted electronically each year to CDFW. The number of breeding adults (26) was estimated from the highest number of active nests that occurred consecutively and is compared with historical data in Figure 9. As many as 47 adult CLTs were counted on May 23, five days before the first nests were recorded. Nest locations were depicted in Figure 5 with WSP nests.

CLTs initiated 21 nests on Hollywood Beach in 2020, the first nest attempts since 2015. Monitors were able to observe two recent hatchlings on June 19th and June 25th, but suspect chicks didn't last much longer than a few days and none survived to fledging. With fairly constant depredations of eggs beginning by June 4, many birds likely initiated more than one nest. Some of the later nest attempts were located in the WSPs nest area over 500 feet to the north. Crows have established permanent, local residency since 2014 and were the most obvious source of depredation with presence noted on most every survey and their clear tracks observed near one nest loss. Crows took the opportunity to raid nests when the number of CLTs present was small enough that their defense attempts were unsuccessful. Ultimately, both colony sizes were too small to adequately defend nests and all eggs were lost and CLTs abandoned this beach by July 6.

A summary of observed CLT breeding population and nest activity is given in Table 4.

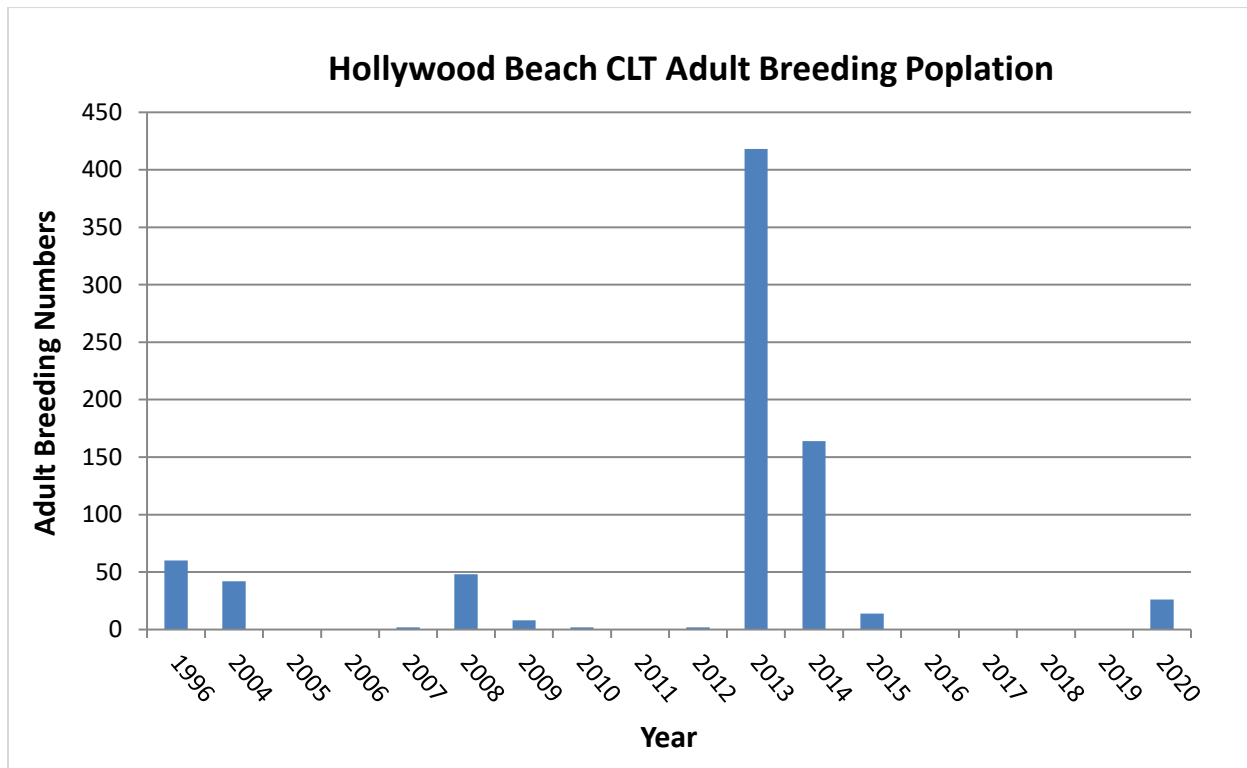


Figure 9. CLT Estimated Adult Breeding Populations

**Table 4. California Least Tern Breeding Summary, Hollywood Beach, 2020**

**Breeding Success**

Date terns first observed	7-May
Date terns last seen	24-Jul*
Maximum number of adults observed	47 (23-May))
Date of first nest	27-May
Date last nest found	22-Jun
Date of first hatch	19-Jun
Date of last hatch	25-Jun
Date of first fledgling	NA
Maximum number of active nests	13
Date of maximum active nests	4-Jun
Estimated number of pairs	13
Total number of nests	21
Total number of eggs	34
<u>Clutch size:</u>	
1 egg	7
2 egg	14
3 egg	0
Average clutch size	2
No. of nests hatching young	2 observed chicks, suspect more
Total number of eggs hatched	4-6
Estimated minimum number of fledglings	0
No. of nests with unknown fate	0
No. of eggs with unknown fate	0

- (pair with fledgling from another beach)

**Documented Mortality**

Preyed upon

Nests	21
Eggs	27-29
Chicks	4-6
Fledglings	0
Adults	0

Human disturbance

Nests	
Eggs	0
Chicks	0
Fledglings	0
Adults	0

Other causes

Nests

Abandoned (pre-term)	0
Damaged	0
Flooded	0

Eggs

Abandoned (pre-term)	1
Failed to hatch (incubated to term)	0
Died hatching	0
Damaged	0

Other Mortalities

Chicks	0
Fledglings	0
Adults	0

CLT breeding activities and hatch success, when applicable, has been observed and recorded on Hollywood Beach beginning in 1996, and continuously since 2004. The summary data is given in Figure 10.

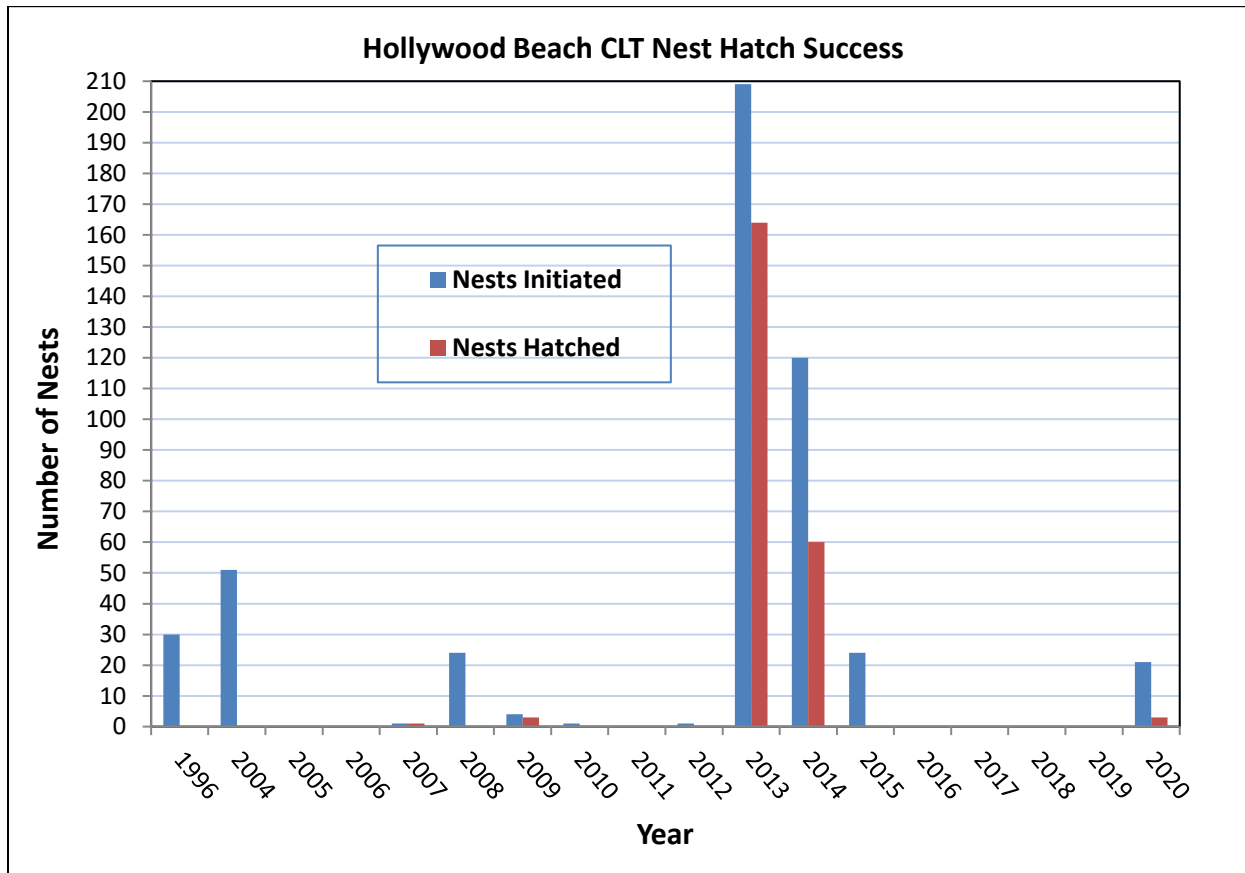


Figure 10. Hollywood Beach CLT Nest Hatch Success Since 1996

## DISCUSSION

Hollywood Beach was busier with more birds nesting than in recent years. The WSPs started out establishing nests approximately 500 feet north of their usually preferred place, then as CLTs established a colony, more WSP nests appeared near them in the usual nesting area seaward of the dune habitat. WSPs established a total of 10 nests, twice the number from recent years. All but one nest hatched 2 or 3 chicks. Unlike in recent years when crows took all chicks under 1 week of age, this year I was able to observe chicks from 8 of the nests, and at least 3 chicks from 3 broods made it to 18 days old. They may have reached fledgling age at a time concurrent with when a large number of adult WSPs and fledglings from other beaches arrived - over 90 WSPs were counted on the beach by August 17th. Without individual banding, fledging success is difficult to verify. After wiping out the CLT colony, the resident crows seemed to focus their energies on human activities further north up the beach during August, leaving the WSPs some valuable time for chicks to grow.

Least terns returned to nest at Hollywood Beach after a 5-year hiatus and attempted 21 nests. Prior to nesting, CLTs were observed using defense behaviors (several diving at crows in the process of depredating WSP chicks and where crows were near a WSP nest enclosure). Ultimately, the colony was not of sufficiently size for CLTs to generate enough defensive action to deter crow depredation. Monitors were able to observe 2 new CLT hatchlings but no chicks survived after that. The two resident American crow families took advantage of the small tern colony size and were able to depredate all eggs and chicks when most adults were away foraging. Because the CLT colony was finished by early July, there is a chance some of the adult CLTs went to another beach and renested.

### **“New” Suitable Breeding Habitat**

The most breeding activity for WSPs this year (7 of 10 nests) occurred over 500 feet north of the historically used nest areas in front of the dunes, in a portion of the beach that has not had mechanical sand-grooming in several years (Figure 10). In this area, Ventura Audubon Society requested that the HD pull back on intensive winter sand-grooming and they complied. In addition, Monitors influenced the private sand-mover to only pull sand from residences to about halfway towards the wrackline, also sparing this area ground disturbance. Consequently, in recent seasons seeds from the nearby vegetated areas have spread and had the opportunity to naturally germinate. The first “pioneer” plants were nonnative sea rocket (*Cakile maritima*), and once established these plants gather sand and nutrients to provide a nursery location for native plant seeds to also find purchase and to germinate. WSPs have often been observed foraging for and finding insects in the sea rocket plants as well as nesting in and near them. Small dunes had started to form along with native shrub growth and with the halt in grooming, driftwood and other washed-up debris were also gathering, contributing to the available soil nutrients and places for dunes to form. During April 2020, many WSPs, including pairs were observed in this sparsely vegetated, early successional dune field.

### **Disturbances to “New” Habitat**

The HD continues to be a good cooperator and keeps its vehicles away from fenced breeding areas or alerts the monitor when they need to enter the vicinity. In contrast, once COVID-19 pandemic stay-at-home orders were issued around 4-28-20, Hollywood Beach remained open to the public and the County sheriff began frequent beach patrols using ATVs and SUVs. These vehicles traveled many trips through the unfenced



**Figure 10. “New” suitable habitat and expanded WSP nesting area on Hollywood Beach 4-21-20**



**Figure 11. Same view of nest area after County sheriff vehicles traveled adjacent by 4-28-20**

portions of the new habitat and essentially flattened new dune formation and young plants (Figure 11). Unfenced areas where WSPs had foraged and were making scrapes were driven over. When questioned, drivers said they didn't know about the sensitive birds but that they were told to drive next to the wrack line (which is also frequently used by plovers with flightless chicks for foraging). In addition to setting vegetation and dune growth back by years, vehicle trips likely disrupted courtship and scrape-making that was observed in this area prior to ATVs driving on the beach. Monitors can only fence so much by hand and even with over 120 fence posts deployed this season, it never seems to be enough. Vehicle tracks occurred right next to fenced areas and, of course, birds don't adhere to remaining in fenced areas at all times.

Number of observed pairs in the new habitat area went from 4 to 2 immediately after vehicle deployment of several passes per hour. The monitor asked the CI Harbor Master to alert County sheriff personnel about snowy plover nesting and to provide them with the educational videos that we sent to them. There were also discussions with USFWS. More fencing was erected and another correspondence was sent prior to first egg hatch to alert all vehicles to keep away from the nest areas where flightless chicks would now be roaming. ATVs seemed to keep a bit more distance from nest fences after these correspondences. Plovers using this beach have shown themselves to be resilient and pairs reappeared to consider the new area of the beach for nesting as of late May, but no doubt the suitability of the habitat has been reduced and it will take years for new vegetation and dune growth to reestablish.

### **Ongoing Threats**

Other, usual threats to breeding success have been documented during each survey on Hollywood Beach. People bringing dogs after the 9 a.m. restriction time (posted on signs) and allowing them to run off-leash continued on a daily basis. Also, the presence of American crows is noted on most every survey. The constant crow presence and human/dog disturbance together magnify threats to chick survival on this beach. Monitors have observed chicks being displaced from hiding places and separated from adults by off-leash dogs and then crows waiting nearby flying in to depredate. So whereas having either dogs or crows may be a nuisance, having both has been observed to be the suspected primary cause of depredation of chicks once they leave the enclosures.

The monitor has had discussions with the County and Harbor Department about the lack of enforcement for dog regulations and phones Animal Control during especially egregious activities. Enforcement has never been observed to occur. In addition, it is very common to see unauthorized vehicle tracks in and around the dunes during the breeding season. Needless to say, whether this is occurring during the day or even more dangerously, after dark, the threats to nests, defending adults, and flightless chicks is very large. Monitors have asked the County about adding gates or signs to the 13 available access points between homes along the beach. So far, there has been no consensus or progress towards resolution for these requests. As a result, people in golf carts, ATVs, motorized wagons, and other off-road vehicles can easily enter the beach and claim they saw no signs prohibiting entry.

A good relationship and interactions continue with the sand-moving tractor operator hired by residents. She calls the monitor before jobs near nesting areas and has avoided working near active nesting/hatching areas. Even so, residents are allowed to hire her to move sand during the breeding season. With nests now more

frequently appearing in the open sand areas, this year-long practice is of concern as Monitors are only present for short periods and don't always find new nests and hatching chicks immediately.

Locals pulling and raking plants, including natives, out of the sand (located on County Open Space land) continues to be observed including near the north nesting habitat. People are also inclined to pick up and remove driftwood, probably thinking they are assisting HD maintenance and not realizing all wrack components are part of the essential habitat elements that WSPs require for successful breeding. While nests in more open areas successfully hatch (with the protection of predator exclosures) once chicks emerge from the protection of exclosures, it is difficult for them to find adequate cover, which leaves them vulnerable to discovery by the ever-present crows. The monitor will often add pieces of driftwood and palm leaves to nest habitat fences to increase chick hiding places as well as for harboring food resources.

Disturbance incidents are noted and photos taken when possible. These are just the events that are witnessed on twice-weekly, 1 to 2-hour surveys; it can be assumed similar events occur with regular frequency and cause numerous incidences of disturbance to breeding birds.

For the first time since 2012, I had a request from the ACOE to provide nest location data prior to their planning the harbor dredging activities for this year. I sent them the WSP and CLT nest location data I had from 2013 to 2020. Discussions with ACOE biologists suggested that they were going to re-calculate the "take" number allowance for this beach, possibly estimating the potential nest displacement that occurs from removing sand in the sand trap with these data. As of mid-January 2021, dredging had caused the removal of all foredunes and into the mid-dune areas that included established red sand verbena (*Abronia maritima*). Tidepools were entering and flooding the area that was used by CLTs for nesting in 2020. There was virtually no flat area suitable for nesting remaining in front of dunes at that time.

## CONCLUSIONS

Depredation by crows and human-caused disturbances continue to reduce WSP and CLT breeding success on Hollywood Beach. WSP nest attempts this year were double the number in the last two years and above average based on the history of data gathered. WSP nest locations have trended over a couple years to expand from in front of the remnant dunes out to sparsely vegetated flat areas of beach. Even though there were signs of new dune development and native plant spread, this area still lacks adequate cover or food resources for newly hatched chicks forcing parents to lead chicks back to the established dunes over 500 feet away immediately after hatch. Hatching success continued to be high with the use of nest exclosures and chick survival was estimated to be higher than in the last four years. Without individual banding, WSP fledging success cannot be verified. After four years of no nest attempts, CLTs returned to establish 21 nests. With superior defense mechanisms, CLT presence likely inspired WSPs to initiate more nests. However, CLTs did not have a large enough breeding colony to adequately defend their own nests from resident crows and this resulted in total depredation of CLT eggs and chicks.

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## APPENDIX A

**Table A-1. 2020 Hollywood Beach Western Snowy Plover Nesting Season Survey Data**

Date	Total	Fe- males	Males	Unk/ Hatch Years	Active Nests	No. of Eggs	Chicks	Potential Preda- tors <sup>1</sup>	Notes <sup>2</sup>
02-Mar-20	17	4	2	11					
09-Mar-20	37	2	6	29				1CAFA/ 4AMCR	
18-Mar-20	48	1	2	45				1CAFA	
24-Mar-20	44		6	38				10CAFA/ 1AMCR	
02-Apr-20	21	11	10					10CAFA/ 2AMCR	
07-Apr-20	9	3	6					7CAFA/ 4AMCR	
13-Apr-20	24	13	11					10CAFA/ 1AMCR	
16-Apr-20	12	6	5	1				6AMCR	
20-Apr-20	8	3	4	1	1	1		5CAFA/ 3AMCR	First nest, HB01. 1E incubated by the M. After placing exclosure, M and F at nest.
24-Apr-20	8	4	4		1	2		9CAFA/ 4AMCR	2 <sup>nd</sup> E observed in HB01.
28-Apr-20	5	2	3		1	3		3CAFA/ 1AMCR	County sheriff deployed 2 ATVs that are driving near nesting areas, and have flattened new dunes and native plants.
4-May-20	7	3	4		1	3		8CAFA/ 3AMCR	New scrapes where ATVs are traveling, fences added.
7-May-20	6	3	3		2	5		14CAFA/ 4AMCR	New nest HB02. ATVs continue many trips near nesting areas.
11-May-20	4	2	2		2	6		8CAFA/ 4AMCR	Local using rake to rip out native plants. County SUV and ATVs continue. Pit bull with no owner.
15-May-20	6	4	2		2	4		8CAFA/ 1AMCR	2E of HB01 wind-buried but F returned, next day unburied and F inc. 3E. Another M scraping. SUV and ATVs still present.
18-May-20	3	2	1		2	6		7CAFA/ 2AMCR	Window Survey
21-May-20	5	4	1		3	7	2	9CAFA/ AMCR2	New nest HB03 near other 2. HB01 hatched 2E but no M observed to care for chicks. Cs stay near scrape and F inc. last E. Food & cover scarce there.
22-May-20	6	4	2		3	7	2	4CAFA/ 1AMCR	HB01 F foraging with 2C. She flew off to forage and left 2C hidden. Continued to inc. 3 <sup>rd</sup> E.

Date	Total	Fe- males	Males	Unk/ Hatch Years	Active Nests	No. of Eggs	Chicks	Potential Preda- tors <sup>1</sup>	Notes <sup>2</sup>
23-May-20	5	4	1		2	6	3 to 1	13CAFA/ 4AMCR	HB01 3 <sup>rd</sup> E hatched, F moved chicks to dunes, crows got 2 Cs – CLTs mobbed them! F with 1C seen after.
25-May-20	4	3	1		2	6	0	11CAFA/ 2AMCR	Didn't find F with C. SUV and ATVs still present.
29-May-20	4	3	1		3	7	0	2CAFA/ 1AMCR	New nest in fence with 6 CLT nests and 32 CLTs.
4-Jun-20	8	3	2		2	5	2 (1) 1 (<1)	6CAFA	HB03 hatched 3E, HB02 hatching (1C)
11-Jun-20	6	4	2		2	4	0	3CAFA/ 1AMCR	HB02 hatched 3E, new nest HB05 (1E)
19-Jun-20	8	5	2	1	3	8	0	1WEGU/ 1AMCR	New nest HB06
25-Jun-20	7	5	1	1	4	12	0	4CAFA/ 1AMCR	HB04 M brooded a CLT chick, fought with its parents for 2 hours. New nest HB07.
29-Jun-20	11	4	3	2	4	12	2 (1)	1CAFA	New nest HB08, N of N fence – found on 6/26
2-Jul-20	10	4	4	2	4	12	0	8CAFA/ 1AMCR	Two pairs scraping in fences.
6-Jul-20	14	5	1	8	4	12	0	3CAFA/ 4AMCR	Pair copulating and scraping in S fence.
10-Jul-20	38	4	2	32	5	14	0		New nests HB09 and HB10; HB05 hatched.
13-Jul-20	26	5	3	16	5	15	2 (4)		Some fence vandalism.
17-Jul-20	14	4	1	8	4	12	1 (8)	4CAFA	HB06 hatched 3E
20-Jul-20	48	5	2	40	4	9	1 (11)	4CAFA	HB09 excl tampered with again, F outside it
24-Jul-20	32	3	2	21	2	6	1 (15) 2 (1) 3 (8)	6CAFA	HB07 hatched 2 of 3E, (1E non-viable); HB08 hatched 3E; suspect HB10 abandoned
27-Jul-20	43	1	3	36	1	3	1 (18) 2 (4)	4CAFA/ 6WEGU	
30-Jul-20	73	1	2	67	1	3	2 (7) 1 (7)	9CAFA	
3-Aug-20	73	1	3	66	1	3	1 (11) 2 (11)	6CAFA	Chicks from HB07 and HB08 seen with males.
7-Aug-20	63		2	56	0	0	3 (1) 2 (15)	3CAFA/ 1AMCR	Last viable nest HB09 hatched.
10-Aug-20	71		2	67	0	0	1 (18) 1 (18)	5CAFA/ 1WEGU	Many migrating birds on beach, difficult to distinguish chicks.
14-Aug-20	92			92	0	0	0	3CAFA	
17-Aug-20	81			81	0	0	0	4CAFA	Seeing more banded birds.
24-Aug-20	0				0	0	0	2CAFA	
32-Aug-20	17			17	0	0	0		
7-Sep-20	33			33	0	0	0	12CAFA	

Notes: Shaded rows are nesting peak. <sup>1</sup> Not a daily count, observations during a typical 2-hour survey. CAFA = *Canis familiaris* (domestic dog), AMCR = American crow. Even though it is not believed that domestic dogs depredate eggs or chicks, their presence on- and off-leash is a direct disturbance to incubating birds and those with chicks. Dogs flushing plovers out from cover can cause depredation by crows, which are ever-present. <sup>2</sup> Abbreviations: N = north, S = south, C = chick, E = egg, inc. = incubating, M = male, F = female, HB## = nest number.

## Issues and Recommendations

### 1. Resident Crow Depredation

**Issue:** Corvids are considered a human-subsidized native species and are increasing where people leave trash and feed birds. Crow depredation of least tern eggs and of newly hatched snowy plover chicks, as well as flushing adults off nests and chasing have been observed on this beach.

**Partial Solutions:** Continue the use of “decoy” empty exclosures to re-enforce non-rewards when crows investigate. Monitors also continue to use Bird-B-Gone plastic spikes on exclosures to discourage landing on them. Volunteer naturalists can remind people not to feed birds or leave trash behind.



Crow near active nest in exclosure

### 2. Unenforced Dog Regulations

**Issue:** Posted dog rules are: dogs allowed on leash before 9:00 a.m. and after 5 p.m. and not allowed between those times. However, people bring dogs all day long and most commonly let them off leash on the beach. On- and off-leash dogs will always be perceived as a threat by beach-nesting birds and cause stress, adults to leave nests and to use energy to distract, separation of broods from adults, and perhaps nest/chick abandonment or losses. Monitors observed two incidences in 2016 of newly hatched WSP chick broods separated from adults by off-leash dogs.

**Solutions:** The agency responsible for enforcement is Ventura County Animal Control. If they could perform 1 or 2 visits per week, talk to dog owners and perhaps give citations, it would decrease scofflaws and at a minimum get leashes used more consistently. Perhaps the hours allowed for on-leash dogs could be adjusted/increased if 100 percent leash use was obtained and enforced, especially during non-breeding season.



### 3. Vehicle Access

**Issue:** Illegal and uninformed authorized vehicle access onto the sand by golf carts, ATVs, and full-sized vehicles through openings off Ocean Street is especially dangerous during nesting season, threatening unfenced nests, flightless chicks, and all beach roosting birds, especially after dark when some joy-riding is suspected.

**Solutions:** There are no barriers or posted signs at the many side street access points (e.g., San Clemente St) that only authorized vehicles are allowed on beach, which would at least clarify the rules. There seems to be confusion about who enforces illegal access. Ventura Audubon Society provided HD with a training video to enhance their knowledge of potential vehicle effects to nesting birds.



Some of 13 access points  
between houses off Ocean Street.



Missed nest



#### 4. Nesting Habitat Loss due to Dredging and Nonnative Plant Spread

**Issue:** During regular dredging years, suitable nesting beach habitat is lost. In addition, nonnative beachgrass is present and spreading in dunes, making parts of the beach unsuitable for nesting. Birds avoid thick vegetation and high dunes for nesting so grass spread is further reducing suitable nest locations.

**Partial Solutions:** VAS hopes to move a Restoration Plan forward to outline removal of European beachgrass (*Ammophila* sp.) while reducing tall dunes in height to potentially expand suitable nesting habitat landward that is not prone to removal by dredging and thus is more permanent. If natural spread of native plants and dune growth was allowed to the north, this also would expand suitable habitat for summer and winter populations.



(Left) Grass-covered dunes (background) and natural dunes in foreground with great blue herons; (right) dunes of unnatural height with nonnative grass outlined within dune field

#### 5. Sand Moving

**Issue:** Private homeowners hire a tractor to move sand from the edge of their property toward the tide line all year. During nesting season, this threatens safety and survival of unknown nests and flightless chicks outside fences and can bury essential natural constituents (e.g., vegetation and driftwood) effectively eliminating cover and invertebrate (food) sources for WSPs.

**Partial Solutions:** Ventura County included more ordinances in the 2018 LCP update to limit sand moving during the WSP nesting season (March-Sept 15th). Monitors have not seen this enforced. We do maintain a good relationship with the current regular tractor driver who has cooperated to call us and clear an area before sand moving, sometimes skipping those areas close to nests. Other operators may not be so careful.



(Left) Private sand-moving tractor; (right) after sand moving (background), WSPs using remaining wrack in foreground

## 6. Harbor Department Beach Grooming

**Issue:** Winter sand grooming by Ventura County removes vegetation, driftwood, wrack and essential natural constituents that provides cover and primary food supply for over-wintering and migratory WSPs that occupy the entire beach often numbering over 100 during the non-breeding season. Vegetation and beach debris are also the catalysts for new dune formation that is prevented where grooming removes them.

**Partial Solutions:** Grooming is not done before October or after March and operators are leaving some fresh wrack at the high tideline. Grooming less beach area near the dunes has allowed more of the native plants to grow and wrack to remain, which has benefited WSPs and other over-wintering shorebirds. Allowing new dune formation could actually trap more windblown sand before it reaches the homes and streets.



## 7. Homeowner Education

**Issue:** Some of the public are not attuned to the idea of sharing the shore with wildlife including sensitive nesting birds, native vegetation, natural debris, or dunes as habitat. Some of the local homeowners don't realize that most of the beach is County Open Space land, that two bird species have federal protection, and that their activities can cause stress and reduced reproductive success.

**Partial Solutions:** Ventura Audubon held a "Beaches as Habitat" public informational meeting in 2016 nearby. Continued seasonal educational sign use. Volunteer naturalists presence during nesting season helps answer questions and explain disturbances, especially to dog owners. Additional outreach by County and HD would help educate residents on these and other (e.g., sea level rise) issues.

## 8. Ultra-lights, motorized paragliders, drones, kites, low-flying aircraft, etc.

**Issue:** Helicopters, low-flying and loud aerial hobbyists near the nesting colony cause distress of incubating birds exhibited by adults leaving the nest. Nesting birds perceive these as predatory threats. Least terns may actually dive at the object and hurt themselves, pilots, or aircraft.

**Partial Solution:** The USFWS has sent a memo with map to local airports reminding pilots to fly above 500 feet in nest areas during the nesting season. Letter may need to be resent every year and to U.S. Coast Guard facility at NBVC.



Motorized paraglider and ultralight observed over Hollywood Beach

## 9. July 4th Celebration and Illegal Fireworks

**Issue:** City-sponsored July 4<sup>th</sup> festivities draw huge crowds, loud noises, and lights of fireworks audible/visible from nesting area that disturbs breeding birds at a high chick presence time of the season. Also, private (illegal) fireworks launched into dunes endanger birds and nests.

**Solutions:** Move the public July 4<sup>th</sup> fireworks celebration from the area. More volunteer naturalists during July 4th and other summer holidays (especially Memorial Day, Father's Day, and Labor Day) helps with public education.

### Illegal fireworks found on Hollywood Beach



